

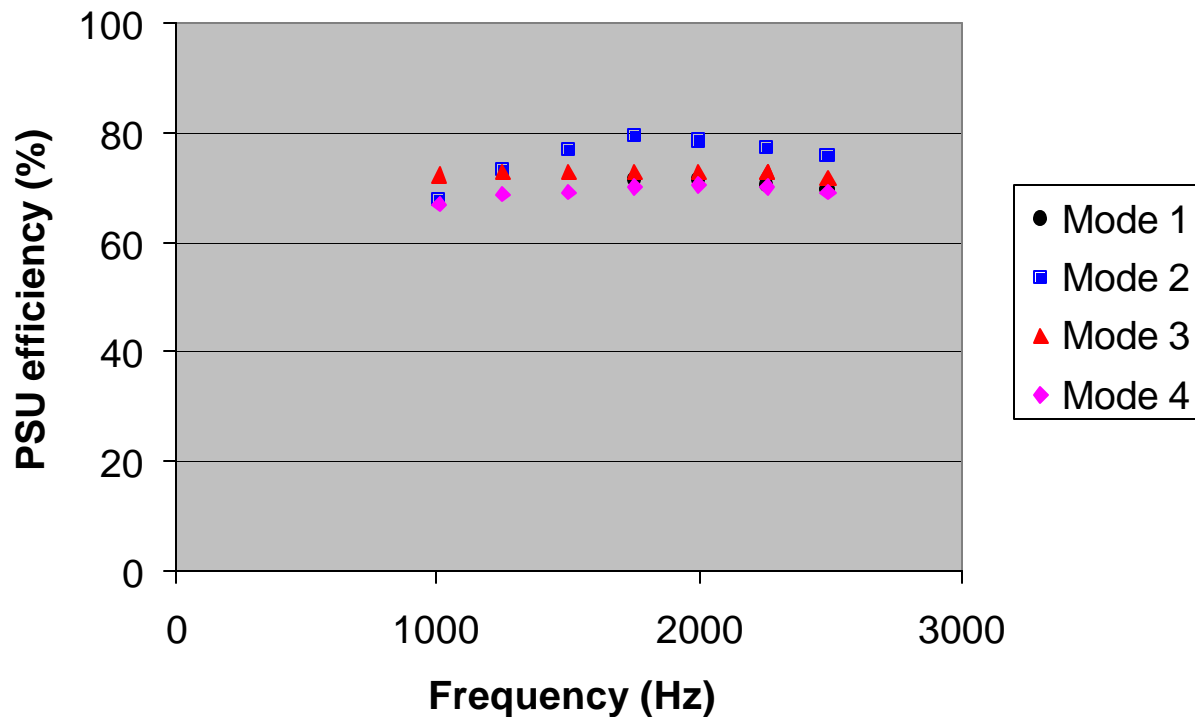
Fuel comparison

- Genset fuel had much lower sulphur level compared to trials fuel

| | Genset fuel | Paxman 18VP185 Fuel |
|-------------------------|-------------|---------------------|
| Type | RF-73-A-83 | A2 |
| Date of Analysis | 21/08/01 | 22/02/02 |
| Hydrogen content (%m/m) | 13.61 | 12.7 |
| Carbon content (%m/m) | 86.39 | 86.2 |
| Sulphur content (%m/m) | 0.043 | 0.11 |

PSU Efficiency and Engine Load

- Efficiency dependence on frequency and load
 - ◆ single frequency, simpler design
 - ◆ choice of frequency determined by weight/size



Summary of MAN B&W Trials

- 80-90% NO_x removal observed in lab trials
- Engine test cell trials showed 30% NO_x, 40% NO removal
 - ◆ systematic checks carried out into measurement technique, operational parameters
 - ◆ main difference is fuel/ exhaust composition (sulphur)
- New and used catalyst being analysed
- Retest catalyst sample from trials
- Engine noise reduced by plasma system
- Electrical load is independent of frequency and engine mode

Non-Thermal Plasma Programme



1996 - 1999

**Laboratory scale
evaluation**

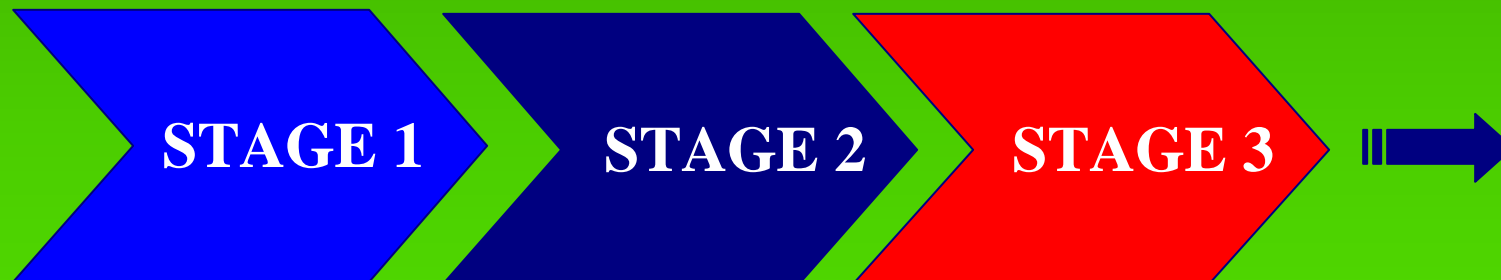
**Paxitan
→
Trials**

1999 - 2002

**1/10th scale
demonstrator**



**Full scale system
build**



Electrocatalysis / plasma development



Summary: - MPS2132 -

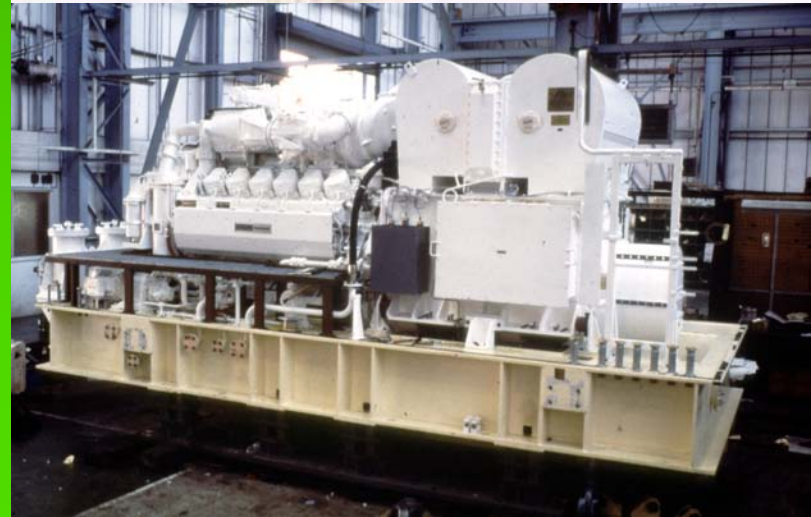


- The Fleet

- UK MOD Trends

- Emissions

- ◆ SCR/NTP for MOD





DIESEL DEVELOPMENT OFFICER

A Non-Thermal Plasma Application for the Royal Navy

Lt Cdr Derek Hughes

(WSA - MPS2132)



?? QUESTIONS ??

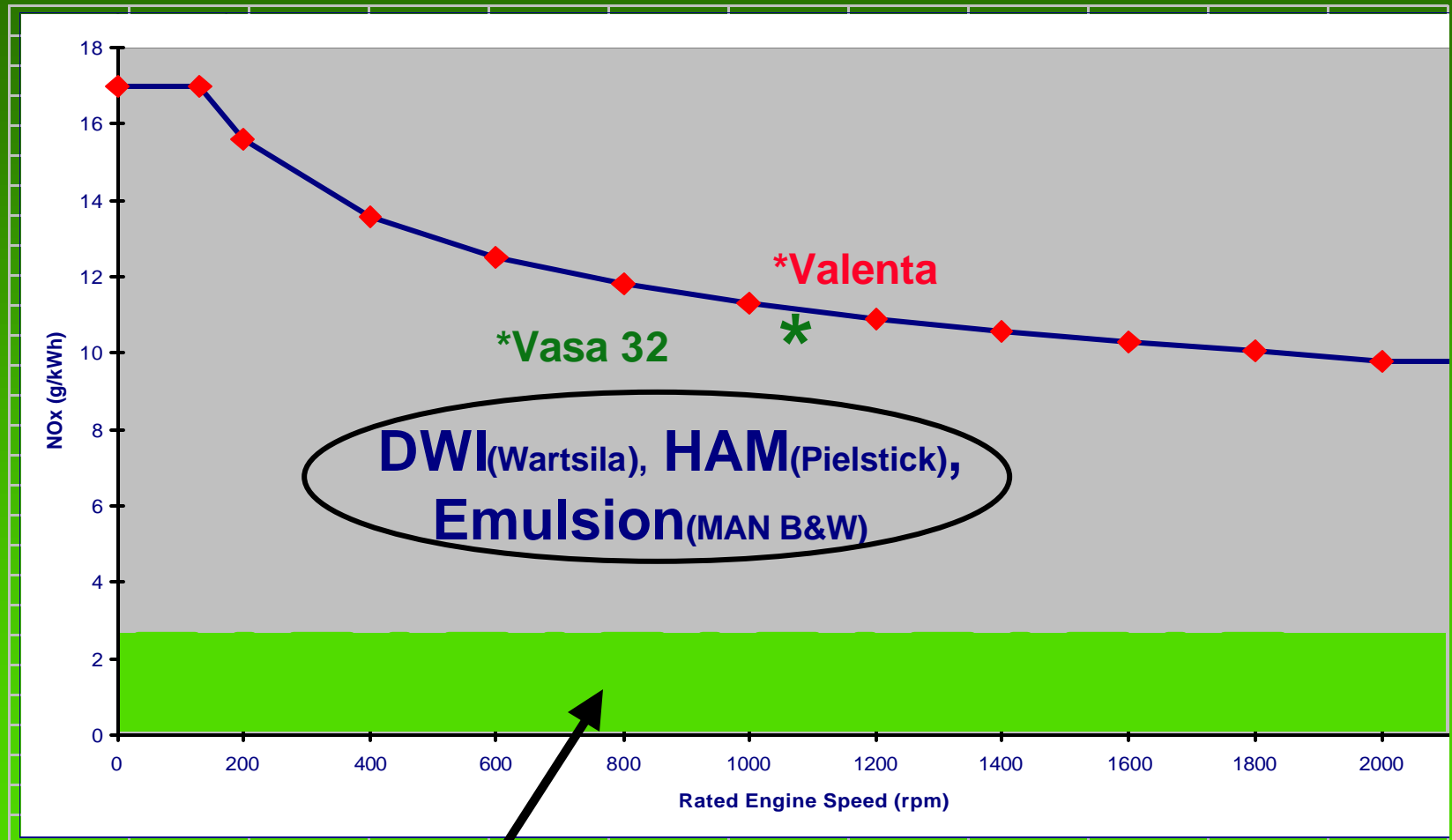




Flow measurement

- Need flow to calculate -
 - ◆ specific energy
 - ◆ space velocity
- Total flow can be calculated by methods described in IMO NOx technical code (ISO 8178-1)
- Use of a slipstream necessitates measurement

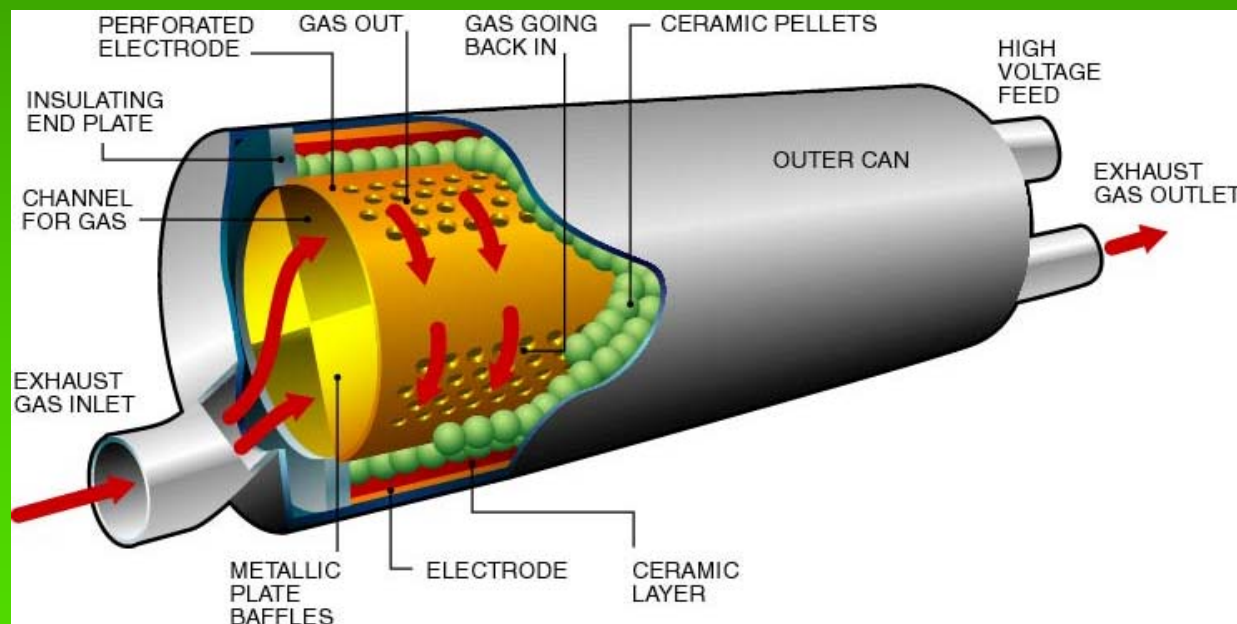
IMO NO_x Emission Standards



SCR Reduction

Use of AEA Technology diesel particulate filter Technology

- AEA Technology Diesel particulate filter to be used for 1/10th scale system
 - separate particulate oxidation and NO_x reduction
 - advantages for power supply technology



Environmental Aim

To maintain legislative compliance:

- ◆ SCR - Demonstrator at PDL (1995), Environmental Awareness Training Facility - HMS Sultan(UCL RN MSc Project)

